

ANGUS PURE

A New Zealand Branded Beef Programme



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Kelloggs Rural Leader Programme 2012

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New Zealand
ANGUSPURE.[®]

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Introduction

Angus Pure is a branded Beef program owned 50 percent by the New Zealand Angus Association, the remaining 50 percent is privately owned. New Zealand Angus Association has 325 active members supplying Angus genetics to commercial beef farmers as part of their branded program. The objective of this program is to create a greater demand and awareness for Angus genetics throughout New Zealand, and obtain premiums for the commercial beef farmer and pedigree bull breeders. This is a mirror image of an already existing program run in America called CAB (Certified Angus Beef) and in Australia called CAAB. (Certified Australian Angus Beef) CAB is a specification based branded beef program, which was founded by the American Angus producers in 1978 to increase the demand for their breed of cattle by promoting Angus cattle as having a greater consistent high quality beef value via superior taste. This brand unlike the New Zealand Angus Pure brand is owned solely by their member base. So why did the New Zealand Angus Association decide to create a beef brand within a already saturated internal and export market, what was their goal and how did they expect to achieve this, questions identified about creating this brand.

- What makes a "Brand"?
- How is a brand defined?
- What does the brand contribute to the consumer?
- What does the consumer expect from the brand?
- What true value does this branded Beef program give to the consumer and producer?

The core principal of a food brand is to supply a uniform enjoyable eating experience of that product every time it is consumed e.g. MacDonalds' "Big Mac" is consistent whether eaten in Hornby, New Zealand or New York, USA. A brand should add value to that particular product by differentiating that particular offering from other competition. This can be achieved by brand image being developed around core values, such as ethical and environmental sustainability or consistent quality which comes with a personal guarantee.

What makes that brand and how is it recognised by the consumer? Is the consumer prepared to pay a higher dollar value for that brand? The only way to add value through the supply chain is to obtain value at the consumer end. This can be derived by various means such as consistency in eating quality, quality control, ethics, taste, trust, environmental programs, collaboration of links in the supply chain for the better good of the product, vertical integration and guaranteed supply of product 52 weeks of the year.

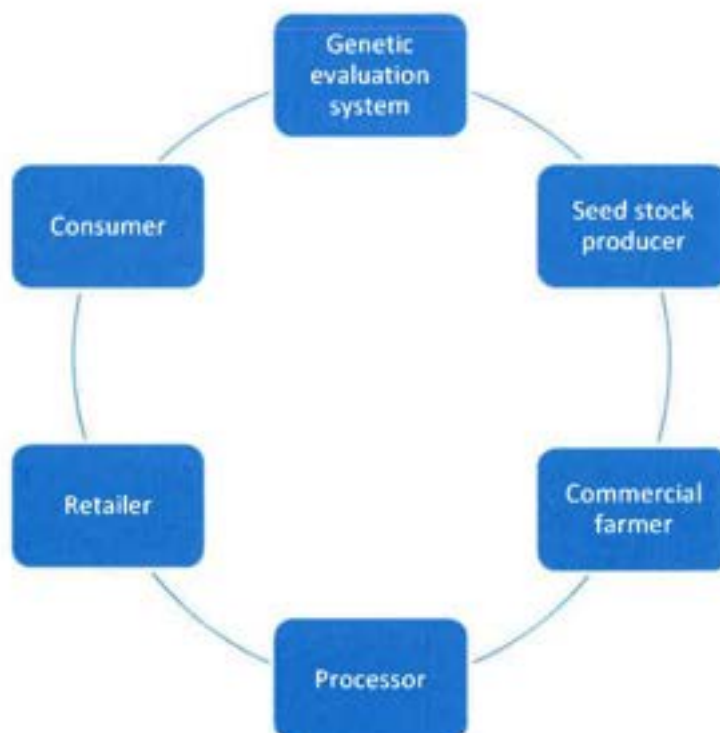


Figure 1. Quality branded supply chain model.

Angus has become a household brand and is very generic in everyday consumable eating from MacDonalds through to the restaurant/retail trade, but would the consumer be able to recognise the difference between "Angus Pure" "Angus Beef" "Aged Angus" or "Farm Pure". These terms are loosely misused, especially in the food service industry, but the registered name "AngusPure" cannot be used legally by an establishment that is not using their brand of beef. What methods do Angus Pure need to put in place to maintain and grow its market share and make sure the customer is not confused by the mired of consumable Angus beef products?

Angus Pure have placed a genetic criteria around the animals secured for their program. Animals must be of 75 percent Angus genetics – sire 100 percent Angus Bull crossed with an Angus or Angus British bred cow. Can the farmers/breeders or consumers in the market identify or access information relative to this genetic criteria and while much work has been done on yield performance for higher quality cuts for the beef industry very little information is transferred to either end of the supply chain.

Angus Pure's vision statement – Angus Pure captures the natural goodness of its environment. Quality is guaranteed by the most stringent standards. The Angus Pure story begins on the beautiful green pastures of New Zealand and finishes on your plate with a peerless product that is rich in nutrients, lean low in fat with fine marbling to deliver extraordinary flavour. We produce Pure Angus Beef from the purest source – a rare thing indeed.

From its inception in 1998 Angus Pure have targeted the opinions of consumers and then strived to supply a product that meets their specifications. Initially sold into the high profile end of the food chain where accountability is paramount, Angus Pure is now found in selected Foodstuffs supermarkets throughout the country and all manner of eating houses nationwide.

With supply available all year round Angus Pure continues to grow as New Zealand's leading beef brand.

- Only heifers and steers
- No hormones or growth promotants
- Grass fed
- All animals must be sired by a registered or PRAC (Performance recorded Angus Bull)
- Processed at an approved plant
- PH level of 5.8 or lower
- Aged minimum of 21 day

A wider explanation of the previous specifications above are as follows:

No growth promotants – HGPS

The use of hormones to promote growth in beef animals in New Zealand is limited and tightly controlled. The estimated use of Hormone Growth Promotants (HGP) in New Zealand sits at around 1% of our slaughtered Prime Beef Cattle, and is monitored/identified through all processing companies. Compare this with Australia where 40 percent of all beef animals slaughtered are thought to have been administered HGP's at some stage of their life. HGP's have been used in the Australian beef industry for over 30 years¹. A growing body of evidence has suggested that the use of HGP to increase growth rate and feed efficiency in animals is detrimental to tenderness and reduction in Intra Muscular Fat (IMF) within the muscle especially when very potent HGP's are used and used repeatedly or near too slaughter date. HGP's improve the growth rate of cattle and help them convert feed to meat more efficiently which means the farmer can increase more beef from less feed – greater productivity. HGP's come in the form of implants which are placed under the skin on the back of the ear of the animals and continuously release a slow dose of hormone called oestrogen

HGP's are currently registered for use in many countries USA, Canada, Australia, New Zealand, South Africa and Japan, but the European Union has banned their use and products from cattle given HGP's since 1998.

Grass fed

90 percent of beef produced in New Zealand is grass fed. While we produce a small number of animals on a straight grain fed diet, the majority of these are for an export market into Japan. Grass fed beef is typically leaner than grain fed beef and contains more omega 3. Omega 3 is the "Healthy Fatty Acid", saturated fat, and is derived from a diet of mainly green leafy plants. The grain fed industry is large in Australia and America where there are large commercial operations who specialise in this form of beef productivity. This form of beef production produces animals with lower Omega 3 content and higher Omega 6 portions. There are many health attributes associated with Omega 3 and research supports benefit to heart health, aids supple joints, reduced inflammation, helps with brain activity learning and memory. Omega 3 also plays a role in the production of powerful hormone like substances called prostaglandins which help regulate important functions including blood pressure, blood clotting, nerve transmission and inflammation responses. Some of the most crucial fats are in the list of compounds found in the membranes of every cell in the human body. After isolating these fatty acids scientific experiments determined that if a ratio of Omega 6 fatty acids to Omega 3 in cell membranes exceed 4 to 1 people develop more health problems².

Not all omega 3s are the same and it is Eicosopentaenic Acid (EPA) and Docosahexaenoic Acid (DHA) from fish oils which are thought to reduce the risk for heart disease and possibly dementia, diabetes and asthma.

Vitamin E is also richer in grass fed animals. This vitamin has a protective effect against heart disease. Some forms of cancer have been linked to high meat consumption or consumption of over cooked meat although links between meat, dietary cholesterol, saturated fat cancer and heart disease are tenuous at best.

Animals recorded by a registered or PRAC recorded animal

A registered animal is an animal whose genetic heritage is recorded for at least five generations and then recorded with the breed society of that animal e.g. Angus, Hereford, Shorthorn. These animals are owned by individual breeders and provide genetic evaluation which is the technology used to quantify the genetic merit of each animal and rank them amongst their Australasian cousins (Group Breedplan figures) through the EBV system. Breedplan is a modern genetic evaluation system for cattle breeders. It offers the breeders the potential to accelerate genetic progress in their herds and provide objective information on bulls they sell or purchase. Group Breedplan shows the direction and rate of genetic trend for the breed over a period of time.

PRAC is an acronym for Performance Recorded Angus Cattle. These animals, while not holding registration status within a registered breed society, are still able to be recorded within the breed database that produce Estimated Breeding Values (EBVs). In New Zealand the major producers of PRAC recorded animals are Landcorp and Mt Linton Station.

The first direction of genetic change is established by

1. The breeding objective of the breeder.
2. The breed traits, which are economically important as well as deciding how much emphasis they place on that individual trait. The rate of genetic change is determined by four factors.
 - Selection Intensity – which is the replacement of sire and dams.
 - Accuracy of selection – this refers to the strength of the relationship between the Breeding Value (BV) and EBV and accuracy of the EBV. The difference between BV and EBV is the BV gives you an overall assessment of the EBV's. EBV'S can be individualised for 17 breeding objectives, such as Birth Weight, Growth Rates, Gestation length, Eye Muscle Area. The rate of genetic advance will be improved when high accuracy EBV's are selected. For Angus breeder's such as "Rennylea" who have focused on producing seed stock with a high correlation for IMF. Other seed stock producers may focus on Birth Weight (BW) producing bulls that are suitable for Heifer mating or Eye Muscle Area (EMA) bulls that are suitable for commercial fattening farms.
 - Genetic Variation – many different sires over many different dams as opposed to single sire mating.
 - Generation interval – is referred to as the time frame for genetic advancements e.g. using artificial insemination will shorten the time frame of genetic improvement over natural mating because the timeframe to maturity of the progeny is shortened therefore allowing the breeder to identify those superior animals sooner.

The transfer of genes (bulls) from breeding herds to commercial herds add financial reward to these producers and are determined solely by the selection decisions of bull breeders. Seed Stock producers may focus on a certain EBV trait that they believe add value to their breeding operation. For example, "Rennylea", an Angus bull breeding operation have focused on IMF. While this trait is heritable, they believe their sires are stacked with carcase genetics, and also produce high fertility early maturing females.

PH level 5.8 or below

PH level is the bench mark used to predict tenderness of a carcass. This is measured post slaughter via a PH Probe being inserted into the muscle, normally between the 12th and 13th rib to produce a PH reading. If there is low glycogen in the muscle the PH remains elevated post slaughter, the meat will have a tendency to become what is referred to as a "Dark Cutter" which traditionally has a PH level of over 6.0 or greater. Dark Cutters are associated with insufficient muscle glycogen reserves in the muscle at the time of slaughter, which causes the carcass's PH level to insufficiently decline to the ultimate PH level of 5.8 – 5.6. This can be caused as the result of animals that were physiologically stressed before slaughter. The ultimate issue with Dark Cutters is reduced shelf life through microbial spoilage, for the retailer this is shortened considerably, bland in flavour and unreliable tenderness. There is evidence that animals with greater average eye muscle area (EMA) of around 70/75cm² for an average 250kg carcass will minimise the dark cutting as the larger muscle area of the animal can reduce the glycogen breakdown through stress. Temperament within breeds can cause high stress levels.



Figure 2. Photo from MIRINZ of dark cutters with pH levels and marbling scores

Aged minimum 21 days

Ageing is a method used to aid tenderness to beef. There are two main forms of ageing wet and dry ageing. Ageing is meat which is kept under a controlled temperature and is associated with tenderness via an enzyme called proteases which breaks down or weakens the connective protein tissue (sinew) within a muscle. The warmth of the meat affects how fast the proteases works post slaughter. Wet ageing is more common as this is quicker and less expensive for processing companies and in general is vacuum packed for a minimum of 2 – 3 weeks. Storage of the product that is wet aged is then boxed in carton form and stored on relative shelving systems.

Carcase aged (dry aged) beef is hung in whole carcass or primal cut form or on stacked shelving systems that allows a controlled chilled airflow to rotate around the service area of the meat for up to 14 days. This results in the varied moisture loss 5 – 10 percent of the carcass weight and develops a greater concentrated nutty flavour in the meat. Chefs enjoy dry aged product from a cooking point of view as there is minimal shrinkage at this stage because the meat has less water volume. The meat will obtain a blackened outside coating which needs to be understood as some clients will view as being spoiled. This form of ageing requires large chiller space and storage which creates extra cost factors for the processing company therefore is limited in production within New Zealand.



Figure 3. Dry ageing carcasses on the bone.

Future potential – Opportunities for Angus Pure Brand

The Meat Standard Australia (MSA) grading system was the forefather of the Australian Beef Industry. The program began in 1996 following detailed consumer research investigating the continuing decline in beef consumption throughout Australia and to try and gain back market share from other protein producers such as Chicken, Pork, Seafood and Lamb.

MSA is focused on consumer needs and has involved voluntary coordination and rewarding best practice across all industry sectors, abattoirs, wholesalers, retailers and food service. Outlets are licensed and incorporated to MSA requirements including their quality assurance programs. The MSA grading model can predict eating quality of 40 individual muscles by six different cooking methods. It applies current knowledge about the factors affecting meat quality – which muscles they affect, and by how much and what interactions there are with other factors. This complex series of factors results in the solution for the consumer, who in the past has had problems selecting beef and choosing the appropriate cooking method. MSA retail labels advise the correct cooking method for every piece of beef to assure the eating quality result. It has enabled consumers to have product confidence within the desired range of quality and price variation. MSA has been adopted by Certified Australian Angus beef (CAAB) which has grown their Beef Sales throughout Australia. MSA provides detailed feedback on eating quality to the processor, finisher and producer.

Within the Angus Pure Brand specifications there is no allocation for the following measurements which MSA have placed great importance on for determining the eat ability of a carcass.

- **IMF** (marbling) which is defined as fat within the muscle of cattle, contributes to flavour, juiciness and tenderness of premium cuts of meat. Marbling develops readily in animals with the right genetics under the right nutritional regime. IMF make up within a muscle can be measured on a live animal via ultrasound scanning, (along with other traits), between the 12 and 13 rib, scotch fillet then presented in a Estimated Breeding Value score (EBV). The evaluation is taken at this point for the genetic heritability factor of an animal which sits at 30 to 50 percent for IMF. This heritability is high so marbling can be selected for with reasonable success. Choosing genetically superior bulls with high EBV's for marbling with high accuracy figures can be achieved. Without genetic potential, cattle will not develop marbling no matter how long they are on feed, but what you feed them does matter. The higher the energy level in the diet the greater the conversion of IMF, therefore diet and growth rates from birth also contribute. This relates greatly to the beef palatability which is made up of tenderness, flavour and juiciness.

- Tenderness can be measured by a Tenderometer/shear force test which is a simulation of a human bite on a piece of steak and can be altered by ageing a product, marbling can also improve tenderness.
 - Flavour is often associated with intensity of palate and research has shown that markedly reduced flavour in high PH cattle.
 - Juiciness is greater in highly marbled beef and is mostly affected by the degree of cooking e.g. rare or well done and the amount of IMF within the beef cut.
- **OSSIFICATION:** is the physiological age on an animal and can be estimated by the degree of ossification or calcification that occurs in the chine bones (along the spine) within the animals and is measured at the thoracic vertebrae, lumbar and sacral which is the last five vertebrae on the tail end of the carcass. As the animal ages the soft cartilage tips calcify or harden. Ossification and age can vary considerably and to a large degree can indicate the growth history of the animal. Animals that endure restricted growth show advanced ossification at the same age compared with animals that have been raised on a good nutritional plan. Therefore the ossification score and weight of the animal can draw conclusions of the production history of the animal which in return is an indicator for eating quality.
 - **MEAT COLOUR:** refers to the intensity of redness the muscle carries, also the lustre or sheen obtain by the muscle. The muscles of warm blooded animals contain a pigment called myoglobin which is normally a dark greyish/purple, but when contact is made with oxygen it reacts and becomes red after 15 minutes of exposure. Meat colour is used in processing plants to indicate tenderness of a carcass through various grading colour chart analysis.
 - **FAT DEPTH/THICKNESS:** is the amount of fat on a carcass and has an impact on the performance of retail yield the amount of muscle/fat ratio. This can also be measured via ultrasound scanning and is done at the P8 site, (High bone/Pin bone region) perpendicular to the surface fat measured in mm at the 12th rib, area scotch fillet or muscle called longissimus to create another EBV reading, there is correlation between maturity of females to relevant fat depth.
 - **EYE MUSCLE AREA (EMA)** is the area and shape – roundness, width and thickness of the muscle and can be measured via ultrasound scanning on a live animal. It is highly correlated to the size of the animal, as the animal gets bigger so does its eye muscle area. It gains greater value when it can be considered in proportion to the weight of the animal and hence becomes an estimate of weight.

It gains more use when it can be adequately adjusted into a Breedplan EBV figure. This can then be used to compare Bulls with Bulls over a group analysis. If a commercial farmers' operation is to produce animals that mature later they will look for high growth rate EBV's for 400 – 600 day. If his operation is to sell store stock or weaned calves, he may look for high growth EBVs at 200 days.

Terminology used

Would the average supermarket shopper or restaurateur really understand the terminology used in creating the Angus Pure Brand?

If not, then how is brand awareness created and what added value can it offer the supply chain model. The added value is created only when the customer will pay more for a item, this can then be distributed back through the supply chain. Can the Angus Pure brand guarantee the consumer that the same cut of beef will eat consistently every time? Research shows that the lack of product confidence has restricted sales volume and price for beef

Has this brand been created through a clever marketing strategy from the New Zealand Angus Association? They have been smarter than their competitors and penetrated the market through varies product streams and sale opportunities, and share volume of cattle numbers compared with other breeds within New Zealand.

With greater emphasis being placed on Genetic improvement via Deoxyribo Nucleic Acid (DNA) sampling, the New Zealand Angus industry still sits well behind its global cousins USA and Australia. The New Zealand genetic pool is limited and seed stock producers are slow to uptake Artificial Insemination (AI) programs which would enable them to use a greater number of proven sires, which would have genetic traits to assist in the production of better eating animals. There is opportunity for further collaboration of genetic pools from these three countries and selection improvement, marketing strategies and global dominance for branded beef production. From 2012 10 percent of Australian beef sires will be evaluated for multiple DNA tests that account for 50 percent of the genetic differences in carcass yield, marbling and beef tenderness which will increase the annual gross revenue for Australian beef by \$43 million for beef quality and \$15.5 million for increased yield.

Australian Beef Co-Operative Research Centre (CRC) Gene Discovery research aims to increase the profitability of the Australian beef industry further by utilising Single Nucleotide Polymorphisms (SNP) chips to discover DNA markers that impact on economically important phenotypes. DNA testing will then account for 50 percent of the genetic variation for each economical trait, and used with EBV's to form a marker assisted Estimated Phenotypic Value. In short steed stock breeders will be able to select breeding cattle with favourable forms of a particular gene or unfavourable forms

of a gene. Commercial producers, cattle finishers, processors will be able to cost effectively use a SNP chip test to best identify the cattle that best meet the market specification within a particular production system.

Further collaboration is required for the identification/grading system of superior carcasses at a processing level within New Zealand. The Source and Trace identification system, recently introduced by the New Zealand Angus Association, encouraging commercial beef farmers to identify which "genetic families" are performing best has yet to gain consideration by meat processing companies. While there is a premium paid for 75 percent Angus progeny there is no other qualification other than phenotypically looking like an Angus. A heightened awareness is required to develop a value chain structure that demonstrates we have considered all steps within the value chain working back from the market. The end result is a value chain that is simplified and one that would enable and promote collaborative behaviour from all parties.

Opportunities exist to work further with processing companies and food service industry in developing secondary cuts, an area that the industry does not sell well or at least sells at a lower margin than they are potentially worth. "Smart Shape" has been developed in Australia by MSA and is helping shift the curve in carcass value and greater utilisation of the secondary cuts. While the red meat industry may own the main meal market in segments like the restaurant trade they must continue to look at finding new market entry points, e.g. seam cutting secondary items, producing smaller portions that have high and consistent eating performance.

"Smart Shape" takes a piece of irregularly shaped meat, e.g. rump and places it into a shaping sleeve via a silicone tube, using the smart shape machine. The squeezing process does not damage the meat but breaks down the structural fibre, producing a consistent shape not unlike eye fillet. After a period of time the sleeve can be removed and the muscle remains in shape. It is estimated that smart shape could take up to 37 percent of boned carcass meat produced under conventional cutting lines and convert it into a shape more useable for consumers after all we must sell appropriate beef cuts to appropriate beef markets offering market diversity where and when required.

As a brand can Angus Pure access?

- Market/consumer information.
- Coordinate data activities to inform participant activities eg inform the farmer of what he/she is producing and whether it is to specification.
- Manage production costs from farm productivity to processing level.
- Tailor produce products to customer specifications
- Guarantee consistency of cut type every time.
- Developments that need to occur for the Angus Pure brand to retain its authenticity, and identify the difference between itself and any other steak. As a consumer we dine at restaurants and order a "steak" with blinkered eyes other than perhaps the breed being identified.
- The wants, in the writer's opinion are for greater collaboration of information from seed stock producers through to the consumer. Greater data collection from processing companies to identify the superior carcasses and reward the farmer for producing what the consumer wants. Marketing these cuts smarter and not just as Eye Fillet, Scotch Fillet. Would the consumer understand the terminology if written on a fine dining menu.
- "250g 60 day dry aged, grass fed, Angus Pure Prime 2yr steer, marble score 6".
- Therefore greater education to the consumer of how to recognise the quality attribute of the particular cut of beef they are purchasing, what to expect from that cut to maximise the eating potential/experience.
- We as beef eating consumers should no longer accept "steak" as being good enough to warrant an exchange of currency.
- "Angus Pure" need to have the flexibility to produce an appropriate cut of beef and sell to the appropriate market, whether finer foods, healthy, traditional, convenience, mainstream, price sensitive markets, markets within markets, brand within a brand, add value to that cut of beef, face the consumption, ethical, market access, technical, cost challenges, "Beef is a whole lot of meat sent to a whole lot of markets throughout a whole lot of countries throughout the world" Angus Pure need to identify and educate the consumer what differentiating traits their beef possess to make it consistently better than other beef.

References

¹ Rose Carr MSC (Hons) Meat Livestock Australia

² Ted Slander Grass fed Meat Docket research 1993

Photos – MERINZ “Dark Cutters”

Logos – New Zealand Angus Association

